Volunteer Lake Assessment Program Individual Lake Reports

OSSIPEE LAKE, OSSIPEE, NH

MORPHOMETRIC DATA

Watershed Area (Ac.):	209,595	**Max. Depth (m):**	18.5	**Flushing Rate (yr^{-1}):**	4.6
Surface Area (Ac.):	3250	**Mean Depth (m):**	8.5	**P Retention Coef:**	0.39
Shore Length (m):	17,100	**Volume (m^3):**	108,421,500	**Elevation (ft):**	406

TROPHIC CLASSIFICATION

Year	Trophic class
1987	OLIGOTROPHIC
2003	OLIGOTROPHIC

KNOWN EXOTIC SPECIES

The Waterbody Report Card tables are generated from the DRAFT 2016 305(b) report on the status of N.H. waters, and are based on data collected from 2006-2015. Detailed waterbody assessment and report card information can be found at www.des.nh.gov/organization/divisions/water/wmb/swqa/index.htm

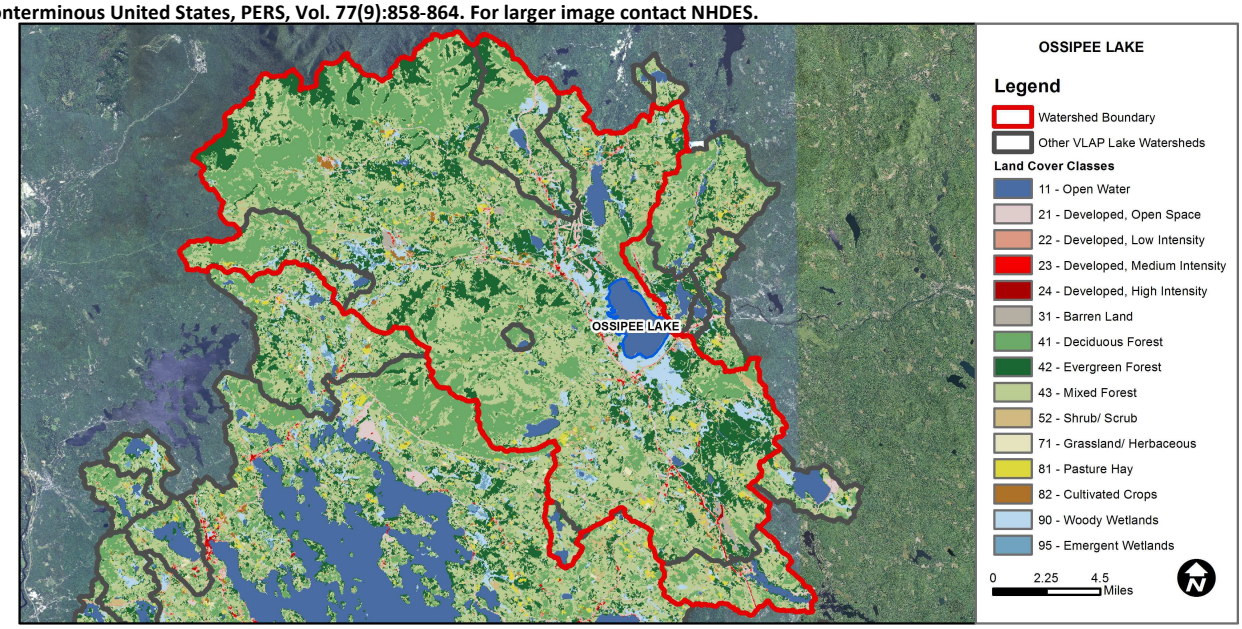
Designated Use	Parameter	Category	Comments
Aquatic Life	Phosphorus (Total)	Good	Sampling data is better than the water quality standards or thresholds for this parameter.
	pH	Bad	Data periodically exceed water quality standards or thresholds for this parameter by a large margin.
	Oxygen, Dissolved	Very Good	All sampling data meet water quality standards or thresholds for this parameter.
	Dissolved oxygen satura	Very Good	All sampling data meet water quality standards or thresholds for this parameter.
	Chlorophyll-a	Good	Sampling data is better than the water quality standards or thresholds for this parameter.
Primary Contact Recreation	Escherichia coli	Encouraging	Limited data for this parameter predicts water quality standards or thresholds are being met; however more data are necessary to fully assess the parameter.
	Chlorophyll-a	Very Good	All sampling data meet water quality standards or thresholds for this parameter.

BEACH PRIMARY CONTACT ASSESSMENT STATUS

OSSIPEE LAKE - DEER COVE PB BEACH	Escherichia coli	No Data	No data for this parameter.
OSSIPEE LAKE - OSSIPEE LAKE NATURAL AREA	Escherichia coli	Slightly Bad	Data periodically exceed water quality standards or thresholds for this parameter by a small margin.
OSSIPEE LAKE - CAMP CODY FOR BOYS BEACH	Escherichia coli	Very Good	All sampling data meet water quality standards or thresholds for this parameter.
OSSIPEE LAKE - CAMP CALUMET BEACH	Escherichia coli	Very Good	All sampling data meet water quality standards or thresholds for this parameter.

WATERSHED LAND USE SUMMARY

Fry, J., Xian, G., Jin, S., Dewitz, J., Homer, C., Yang, L., Barnes, C., Herold, N., and Wickham, J., 2011. Completion of the 2006 National Land Cover Database for the Conterminous United States, PERS, Vol. 77(9):858-864. For larger image contact NHDES.



Land Cover Category	% Cover	Land Cover Category	% Cover	Land Cover Category	% Cover
Open Water	3.48	Barren Land	0.66	Grassland/Herbaceous	0.37
Developed-Open Space	2.87	Deciduous Forest	22.98	Pasture Hay	0.86
Developed-Low Intensity	0.75	Evergreen Forest	20.55	Cultivated Crops	0.51
Developed-Medium Intensity	0.25	Mixed Forest	38.67	Woody Wetlands	4.85
Developed-High Intensity	0.04	Shrub-Scrub	2.52	Emergent Wetlands	0.59

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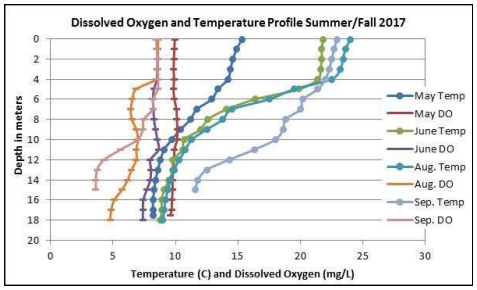
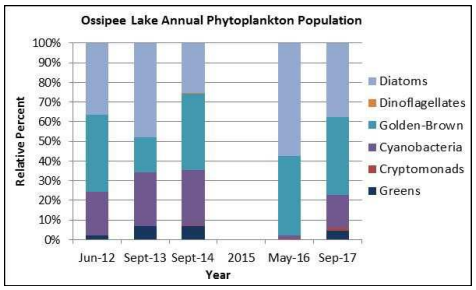
Ossipee Lake, Ossipee
2017 Data Summary

Recommended Actions: Ossipee Lake water quality is generally representative of oligotrophic, or high quality, conditions. However water clarity (transparency) was below average for the majority of the summer season. Above average spring and early summer rainfall and resulting stormwater runoff and flushing of waters rich in dissolved organic matter may influence water clarity. Continue measuring apparent color to evaluate relationships between water color and water clarity. Color data collected this year indicated that the water was twice as dark than when measured in 2003. Conductivity levels have steadily increased since 2012. Educate watershed residents on ways to reduce the application of de-icing products containing sodium chloride on their walkways and driveways. Continue watershed management activities and the development and implementation of a watershed management plan. Keep up the great work!

Observations (*Refer to Table 1 and Historical Deep Spot Data Graphics)*

- **Chlorophyll-a:** Chlorophyll levels remained stable from May through September. Average chlorophyll level decreased slightly from 2016, was much less than the state median, and was slightly less than the threshold for oligotrophic lakes. Historical trend analysis indicates relatively stable chlorophyll levels with moderate variability between years.
- **Conductivity/Chloride:** Epilimnetic (upper water layer), Metalimnetic (middle water layer) and Hypolimnetic (lower water layer) conductivity and/or chloride levels were approximately equal to the state medians and generally increased slightly as the summer progressed. Historical trend analysis indicates stable epilimnetic conductivity levels since monitoring began.
- **Color:** Apparent color was measured in the epilimnion and indicates the lake water is moderately tea colored, or brown.
- **Total Phosphorus:** Epilimnetic phosphorus levels were slightly elevated in May, decreased to a low level in June and then continued to decrease through September. Average epilimnetic phosphorus level decreased from 2016, was less than the state median, and was approximately equal to the threshold for oligotrophic lakes. Metalimnetic and Hypolimnetic phosphorus levels fluctuated within a low range.
- **Transparency:** Transparency measured with (VS) and without (NVS) the viewscope was below average (worse) in May following a significant storm event, increased (improved) slightly in June and August but remained below average, and then increased (improved) to within a normal range in September. Average NVS transparency decreased from 2016 and was slightly higher (better) than the state median. Historical trend analysis indicates highly variable transparency since monitoring began.
- **Turbidity:** Epilimnetic turbidity levels were elevated in May following a significant storm event, and then decreased to within a low range. Metalimnetic and Hypolimnetic turbidity levels fluctuated within a low range.
- **pH:** Epilimnetic pH levels were within the desirable range 6.5-8.0 units and historical trend analysis indicates a stable epilimnetic pH level since monitoring began. Metalimnetic pH levels were generally slightly less than the desirable range. Hypolimnetic pH levels were slightly more acidic and less than desirable.





Station Name	Table 1. 2017 Average Water Quality Data for OSSIPEE LAKE-OSSIPEE									
	Alk. mg/l	Chlor-a ug/l	Chloride mg/l	Color PCU	Cond. uS/cm	Total P ug/l	Trans. m		Turb. ntu	pH
							NVS	VS		
Epilimnion	5.5	1.90	7	60	50.4	8	3.54	4.02	0.75	6.97
Metalimnion					47.3	7			0.51	6.48
Hypolimnion					45.0	8			0.73	6.37

NH Median Values: Median values for specific parameters generated from historic lake monitoring data.
Alkalinity: 4.9 mg/L
Chlorophyll-a: 4.58 mg/m^3
Conductivity: 40.0 uS/cm
Chloride: 4 mg/L
Total Phosphorus: 12 ug/L
Transparency: 3.2 m
pH: 6.6

NH Water Quality Standards: Numeric criteria for specific parameters. Results exceeding criteria are considered a water quality violation.
Chloride: > 230 mg/L (chronic)
E. coli: > 88 cts/100 mL – public beach
E. coli: > 406 cts/100 mL – surface waters
Turbidity: > 10 NTU above natural level
pH: between 6.5-8.0 (unless naturally occurring)

Historical Water Quality Trend Analysis

Parameter	Trend	Explanation	Parameter	Trend	Explanation
Conductivity	Stable	Trend not significant; data show low variability.	Chlorophyll-a	Stable	Trend not significant; data moderately variable.
pH (epilimnion)	Stable	Trend not significant; data show low variability.	Transparency	Stable	Trend not significant; data highly variable.
			Phosphorus (epilimnion)	Stable	Trend not significant; data highly variable.